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41–45; "Die Perspektivität im geometrischen Unterricht der OII" by M. Enders, 46–51; "Die Kegelschnitte als Kreisprojektion" by J. Arneberg, 52–57; "Die Exponentialfunktion im Unterricht" by E. Götting, 58–62; "Kleine Mitteilungen," 62–65; "Aufgaben-repertorium," 65–71; "Bücher Besprechungen," 71–87 [not all of the books are mathematical.]

UNDERGRADUATE MATHEMATICS CLUBS.

Edited by U. G. Mitchell, University of Kansas, Lawrence.

CLUB ACTIVITIES.

The attention of our readers is called to the fact that among the clubs reported this month are two which have not before been listed by the Department. One of these, "The Pascal Circle" of Trinity College, Washington, D. C., has been organized for four years. The other, "The Square" of Washington Square College, New York University, is, so far as the writer is aware, the most recently organized club having begun its activities in February of this year.

Mathematics Club of Columbia University, New York, N. Y.

[*1918*, 227–228; *1919*, 262.]

Officers 1919–1920: President, Joseph Feldt '21; vice-president, Barclay V. Heuill '21; secretary, Albert E. Meder, Jr., '22; faculty adviser, Professor Lewis P. Siceloff. These officers constituted the program committee.

The average attendance at meetings during the year was twenty-five. The programs were as follows:

October 31, 1919: "Geometric inversions" by Albert E. Meder '22.
November 21: "Cardinal numbers" by Joseph Feldt '21.
December 5: "The catenary and the suspension bridge" by Barclay V. Heuill '21.
December 17: "The Newtonian theory" by Israel Koral '20.
January 9, 1920: "What is a point?" by Professor Cassius J. Keyser.
February 13: "The history of mathematics in Columbia University" by Professor Thomas S. Fiske, chairman of the department of mathematics.
February 27: "How tables of logarithms are made" by Edward H. Reimer '22.
March 12: "The Einstein theory" by Doctor Kenneth W. Lamson of Barnard College.
March 26: "Origins of the calculus" by Oscar Bodansky '22.
April 9: "Famous problems in the history of mathematics" by Professor David Eugene Smith, president of the Mathematical Association of America.
April 21: "The number π" by Frank Frink, Jr., '22.
May 7: "The geometry of the cubic equation" by Professor Henry B. Mitchell.

The Pascal Circle, Trinity College, Washington, D. C.

An undergraduate Mathematics Club was organized at Trinity College, Washington, D. C., under the name of the "Pascal Circle," in 1916, to give students of mathematics an insight into the problems of current magazines and to study the principles underlying mathematical recreations. The Circle had twenty-two names on its roll that year and held fortnightly meetings. The club has improved each year in numbers, spirit and aims. During 1919–20 it had about thirty-five members and included on its program papers on the history of mathematics. The meetings have been informal in character and enlivened by discussions on present day topics or mathematical puzzles and recreations of interest.

The officers of the Circle for the year 1919–20 were: President, Mary C. Duncan '20; vice-president, Margaret M. Walsh '21; Secretary-treasurer, Julia Thomas '22; faculty adviser and honorary president, Professor Marie C. Mangold.

October, 1919: The initial meeting was devoted to the reception of new members and to a short interpretation of the constitution of the Circle by the president. At this meeting it was decided to have special pins for the society and all members were invited to submit designs.

November: "Blaise Pascal" by Mary C. Duncan '20. The speaker explained why the mathematical club of Trinity College chose the name of "Pascal Circle." The mathematical principle underlying "magic number cards" was discussed by the club.

December: "The history of arithmetic" by Margaret Walsh '21. Designs of pins were submitted and that of Margaret Sheehan '19 was accepted. The pin is of black enamel with gold edge and gold letters. It is in the form of a Pascal triangle bearing the Greek letters πτκ representing the initial letters of "Pascal" Trinity College.

February, 1920: "The History of Geometry" by Professor Marie C. Mangold.

March: "A psychological test" by Margaret Sheehan '19: "A psychological problem" by Marguerite Hopper '22.

At a second meeting in this month a paper was read on "The history of algebra" by Julia Thomas '22 and the formation of magic squares was discussed and explained by various members of the club.

April: "Women who have played a part in the history of mathematics" by Margaret Crotty '21.

May: "The church and mathematics" by Catherine Manion '20.

The last meeting of the year was a social meeting.

The Square, Washington Square College, New York University, N. Y.

The Mathematics Club of Washington Square College was organized February 18, 1920, and named the "Square." For the present it was decided not to limit the membership to advanced students and as a consequence a great deal of interest has been shown by freshmen.

The officers for 1920 were: President, Sophie Epstein '23; secretary-treasurer, Rose Beckenstein '23; faculty adviser, Assistant Professor Earnest J. Oglesby.

The average attendance has been about fifteen. Meetings are held twice each month during the academic year.

The following programs were given during the first half of 1920:

February 18, 1920: Organization.
February 26: "Magic squares" by Sophie Epstein '23.
March 11: "Flatland" by Bertha Turetzky '23.
March 25: "Mathematics of warfare" by Isadore Jacobs '23.
April 9: "Π" by Elias Gastman '23.
April 21: "Card tricks" by Isadore Saperstein '23.
May 5: "The duplication of the cube" by Winifred Jacobs '23.

The Mathematics Club of Vassar College, Poughkeepsie, N. Y.

[*1918,* 136, 456; *1919,* 264; *1920,* 78–79.]

The descriptions of the meetings held during 1919–20 were furnished by the secretary, Miss Elizabeth Larsen.

October 28, 1919: This first meeting was a Welcome Picnic to the new members of the club. "Hot-dogs," cider and doughnuts were consumed around a bon-fire. Cards were circulated having fortunes written on them with invisible ink, in the form of milk, which became legible upon being held over the fire. Mathematical charades were acted out by members as part of the evening's amusements.

November 18: This was the first regular meeting of the year and a new plan was presented for conducting the meetings. A different committee was to be appointed to take charge of the program of each meeting. The aim of this scheme was to divide the work and so enlist the interest of a larger number of members. Also, a mathematical contest of problems was announced. Each month problems were to be presented to the club and at the end of the year a prize of $5 was to be awarded to the person solving the greatest number. The subject of the meeting was "The relation of mathematics to science." Talks were given showing the part played by mathematics in physics and chemistry.

December 9: The subject for discussion was "Mathematics and art." It was explained how certain mathematical ideas and principles were present in nature, and the principle of symmetry, the law of order and the existence of a definite proportion known as "the golden section" were illustrated.

January 15, 1920: The subjects for discussion were "The squaring of the circle" and "The duplication of the cube."

February 19: Election of officers and social meeting. Officers elected for the second semester were : President, Mildred Booth '20; vice-president, Amy Davison '21; secretary-treasurer, Elizabeth Larsen '20; faculty member of the executive committee, Professor Elizabeth B. Cowley; student member of executive committee, Helen Lewis '20.

The entertainment program consisted in guessing the pictures of leading mathematicians and listening to delightful talks on Descartes, Newton and Euclid as seen in an interview.

March 18: Subjects for discussion were "Cranks and their follies" and "The eternal triangle." Part of the hour was spent in solving problems, a prize being awarded for the greatest number of correct solutions. After the business meeting refreshments were served.

April 27: The subject discussed was "The circle" including the nine-point circle and the problem of Apollonius, to construct a circle tangent to each of three given circles. A lighter supplement was added to the purely instructive part of the program by the reading of one of Stephen Leacock's essays entitled "An interview with our greatest scientist."

May 27: Spring picnic. The five-dollar prize for the greatest number of solutions to the problems presented during the year was awarded by Professor Cowley. Various members of the club had composed mathematical parodies of well-known songs and the entertainment feature of the meeting consisted in the singing of these parodies.

PROBLEMS AND SOLUTIONS.

EDITED BY B. F. FINKEL AND OTTO DUNKEL.

Send all communications about problems and solutions to B. F FINKEL, Springfield, Mo.

PROBLEMS FOR SOLUTION.

[N.B. The editorial work of this department would be greatly facilitated if, on sending in problems, the proposers would also enclose their solutions—*when they have them.* If a problem proposed is not original the proposer is requested *invariably* to state the fact and to give an exact reference to the source.]

2858. Proposed by C. P. SOUSLEY, Pennsylvania State College.

A boy can split wood as fast as his father can saw, and the father can split twice as fast as the son can saw. How should the money received for their labor be divided?

2859. Proposed by L. S. DEDERICK, U. S. Naval Academy.

Derive an expression for the limit of error in evaluating a definite integral by Simpson's Rule.

2860. Proposed by E. O. BROWN, Chicago, Ill.

A frustrum of a right circular cone has a volume v. The lateral area added to the lesser base is a sum which is a minimum. Determine the dimensions of the frustrum in terms of v.

2861. Proposed by B. F. FINKEL, Drury College.

Obtain by plane geometry, *i.e.*, without use of calculus, a construction for finding points on the envelope of a system of circles whose diameters are chords of a fixed circle passing through a given point on it. Also determine geometrically the nature of the locus.

2862. Proposed by J. L. RILEY, Stephensville, Texas.

Show that the whole area commanded by a gun on a hillside is an ellipse whose focus is at the gun, whose eccentricity is the sine of the inclination of the hill to the horizon, and whose semi-latus rectum is twice the greatest height to which the gun could send a ball.